

REMARKS

Claims 1, 6, and 9-12 are pending.

Claims 1, 6, and 9-12 are rejected under 35 U.S.C. § 103 (a) as being unpatentable over U.S. Patent No. 5,590,387 to Schmidt et al. ("Schmidt") in view of U.S. Patent No. 6,190,578 to Yokoyama et al. ("Yokoyama").

Applicants traverse.

The Examiner concludes that claim 1 is written as a product-by-process claim. The Examiner contends that only process steps which impart a particular feature to the product are considered where the feature is given patentable weight due to its relation to the final product.

It is respectfully submitted that when the process by which a product is made *characterizes the final structure*, a process limitation must be given patentable weight *as defining*, in part, an element of the final structure. In other words, if a process limitation defines a functional step that *qualifies* the final structure, then the process limitation is a positive *structural element* of the final structure.

In the instant case, it is respectfully submitted that the claimed limitation "drying a medium selected from the group consisting of the water and the organic solvent" *characterizes* the final structure. In particular, the medium is not a *separately formed structure* from the granular metal powder, but instead, the medium is part of the granular metal powder itself. Moreover, "drying" forms distinctive properties of the resulting structure (*i.e.*, containing the organic compound, a density of at least 1.0 g/ml and at most 5.0 g/ml; and water with a content of at least 0.1 wt% and at most 1.5 wt%).

The Office Action asserts that Schmidt discloses a method for producing metal sintered bodies and coatings where the intermediate product is a metal powder that comprises nanoscale

metal particles and an organic compound. The Examiner contends that Schmidt's intermediate product is produced by preparing a solution including a medium selected from water, a polar organic solvent, and a mixture of them; nanoscale metal particles; and an organic compound capable of being adsorbed on the surface of the metal particles. The Examiner opines that this step is followed by the drying of a medium selected from the group consisting of water and organic solvent. The Examiner concludes that since the intermediate product of Schmidt is made by a process that is substantially the same as that being claimed, and since the process starting materials are substantially the same as that being claimed, it is reasonably expected that the metal powder would have the claimed apparent density and granular structure. The Office Action acknowledges that Schmidt does not specify a particular water content. The Office Action relies on Yokoyama in an attempt to cure the admitted deficiencies of Schmidt.

The Examiner opines that Yokoyama discloses the regulation of water content in a metal powder. The Examiner contends that too much water will promote the curing of the organic compound, thereby deteriorating the preservation stability in some cases or promoting oxidation. The Examiner concludes that given Yokoyama's disclosure of water content, it would have been obvious to one of ordinary skill in the art to modify the water content of Schmidt's powder to prevent the excessive oxidation. The Examiner further opines that one could find a satisfactory wt.% of water content through routine experimentation.

In Example 1 of Schmidt, the suspension was separated out, the filter residue was washed with ethanol, and the resulting moist powder was dried for 8 hours at 70 °C. It is well known by persons skilled in the art that the metal powders contract to form a solid aggregate at the time when the medium was volatilized, thereby forming massive powders having a high density. Schmidt describes a *different* drying process than the claimed subject matter. Thus, the apparent

density and granular structure of the product formed after drying in Schmidt is *different* from the claimed subject matter. Therefore, the apparent density of the metal powders of Schmidt is the **same** as the bulk material (*e.g.*, Fe : 7.9 g/ml, Co: 8.9 g/ml), not the claimed granular metal powder.

According to the claimed subject matter per claims 1 and 6, the water content after drying is at least 0.1 wt% and at most 1.5 wt% in the metal powder. Thereby, as taught in the instant specification, the contraction of the metal powders does not fully progress (*see, e.g.*, pg. 7, lines 15-21 of originally filed specification). As a result, the metal powders have low density values, such as, 1.0 to 5.0 g/ml, specifically Ag: 2 g/ml. However, Schmidt does not disclose or suggest this, and apparently is unaware of the unexpected improvement in its application in dry form that is readily redispersed in a solvent provided by the claimed granular metal powder.

Yokoyama discusses the regulation of water content in a metal powder. In Yokoyama, the purpose of the regulation of water content is to prevent the metal powder from deteriorating and to prevent oxidation from proceeding excessively. Indeed, Yokoyama states col. 16, lines 53-55:

It is preferable that the copper alloy powders so obtained are kept away from contact with the moisture in the air *as much as possible* to prevent excessive oxidation or excessive moisture adsorption (*emphasis added*).

Yokoyama discusses that the water content in the metal powder should be *minimized*. In contrast to the claimed subject matter, the metal powder of Yokoyama requires a negligible amount of water or preferably none. As a result, there is no need for Yokoyama to be concerned with a water content of *at least 0.1 wt% and at most 1.5 wt%*.

In the claimed subject matter, water is included to provide the granular metal powder with excellent redispersion in a solvent and superior handling in dry form. On the other hand,

Yokoyama *excludes* water. Thus, Yokoyama does not cure the admitted deficiencies of Schmidt.

It is the Applicants' understanding of the Examiner's position that Schmidt discloses a method for producing metal sintered bodies and coatings where the intermediate product is a metal powder. The process of Schmidt is replaced with the method of forming a metal powder of Yokoyama to include regulating the water content to prevent deterioration, even though Yokoyama *teaches away* from using water by keeping the powders away from water *as much as possible*. Further, Yokoyama is *silent* regarding the apparent density of the granular metal powder. Therefore, a person skilled in the art would not be motivated to modify Schmidt's process based on the teachings of Yokoyama.


As Schmidt and Yokoyama do not disclose the same granular metal powder as disclosed by the present inventors, and even if combined still fail to disclose or suggest the elements recited by claims 1 and 6 the combination of Schmidt and Yokoyama does not render the granular metal powder as recited by claims 1 and 6 obvious. Reconsideration and withdrawal of the obvious rejection are solicited.

**Application No.: 10/575,898**

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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